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ENTOMOLOGICAL ASPECTS OF THE PILOT TEST OF STABILIZED PYRETHRINS AGAINST THE WESTERN HEMLOCK LOOPER ON THE MT. BAKER NATIONAL FOREST, WASHINGTON - 1969

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INTRODUCTION

Stabilized pyrethrins will be tested for control of the western hemlock looper, *Lambdina fiscellaria lugubrosa* Hulst, on the Mt. Baker National Forest, Washington, during July, 1969. The test will be made in two phases: (1) individual tree tests where a known number of looper larvae will be placed on small single trees and sprayed, (2) a gross pilot test of about 200 acres in a naturally infested stand. The individual tree tests will be made first. If the pyrethrins prove effective, the gross pilot test will follow immediately.

The individual tree tests will be conducted by the Pacific Northwest Forest and Range Experiment Station and the gross pilot test by Division of Timber Management, Region 6.

This plan describes the entomological procedures to be followed during the gross pilot test.

OBJECTIVE

The objective of this test is to determine if the stabilized form of pyrethrins is an effective control agent against the western hemlock looper when in natural forest conditions.

LOCATION OF THE TEST AREA

The proposed test area is located along the Kindy Ridge Road, T.34N., R.12E., on the Baker River Ranger District. The stand composition is predominately western hemlock with scattered western redcedar and true firs. It is a mature stand with an understory of hemlock and cedar saplings.

APPLICATION OF TEST

The stabilized pyrethrins will be mixed at the rate of 0.2 pounds active ingredient per 1 gallon of stabilizer and oil. Application will be made by helicopter equipped with conventional spray equipment and at the rate of ½ gallon (0.1 pound of active ingredient) per acre. The test area will be approximately 200 acres in size.

DETERMINATION OF INSECTICIDE-CAUSED MORTALITY

Mortality of the western hemlock looper larvae caused by the pyrethrin will be determined by three methods: (1) comparison of frass drop before and after spraying, (2) actual count of dead looper larvae, and (3) comparison of number of looper larvae per 18-inch hemlock branch before and after spraying. The effect of pyrethrins on other defoliators in the area will also be noted.

FRASS DROP DETERMINATIONS

Trays to catch frass drop from the overstory trees will be placed under ten mature trees at widely spaced intervals throughout the test stand. Four trays will be placed around the drip line of a tree. Frass drop determinations will be made for a 4-day period just prior to spray date and for a 4-day period after spraying. A comparison of amount of frass collected during the pre-spray period and the post-spray period will indicate the looper population change due to insecticide application.

DEAD LOOPER COUNT

If the pyrethrin spray is effective, the affected loopers should fall into the trays used for frass collections. The number of dead larvae found in the trays will be compared to the number of larvae found in trays placed in a check area which will not be sprayed.

LOOPER NUMBER - PRE-SPRAY AND POST-SPRAY

Counts will be made 1 day before spraying and 2 or 3 days after spraying. Counting will be done by clipping two 18-inch branches from three understory trees near each tree with the frass trays. All larvae will be counted and preserved in alcohol for later instar determination.

SPRAY DISTRIBUTION

Spray distribution resulting from the aerial application of the pyrethrins will be estimated by the use of 4 x 5 inch oil-sensitive spray deposit cards.

Since the carrier for the pyrethrins is an oil and the spray droplet size will be in the range of 200 μ to 400μ, the spray distribution should register very well on oil-sensitive cards. At least four cards will be placed around each tree selected for the frass drop determinations. In addition several lines of cards will be placed across the spray area.